

CLAIMS

What is claimed is:

1. A milking claw for a dairy animal having a backbone defining an axially extending longitudinal direction, and an udder having four teats comprising a front pair of laterally spaced teats and a rear pair of laterally spaced teats, said claw having a top having four inlets directing incoming milk flow into said claw respectively from said four teats, said claw having a bottom having an outlet subject to vacuum for drawing milk therefrom, said claw lying along a central longitudinal axis extending between the animal's legs and generally parallel to said backbone, said inlets comprising a front pair of first and second inlets laterally spaced on opposite sides of said longitudinal axis and receiving milk from said front pair of teats and directing such milk rearwardly into said claw on laterally opposite sides of said longitudinal axis, and a rear pair of third and fourth inlets laterally spaced on opposite sides of said longitudinal axis and receiving milk from said rear pair of teats and directing such milk forwardly into said claw on laterally opposite sides of said longitudinal axis,
 - 15 said claw top having a first opening from which said first inlet extends forwardly,
 - said claw top having a second opening from which said second inlet extends forwardly,
 - said claw top having a third opening from which said third inlet extends rearwardly,
 - 20 said claw top having a fourth opening from which said fourth inlet extends rearwardly,
 - said first and third openings being on a first lateral side of said longitudinal axis,
 - 25 said second and fourth openings being on a second lateral side of said longitudinal axis,
 - said first opening introducing milk flow into said claw along a first

rearwardly directed milk flow path traversing rearwardly of said third opening,

30 said second opening introducing milk flow into said claw along a
second rearwardly directed milk flow path traversing rearwardly of said fourth
opening,

said third opening introducing milk flow into said claw along a third
forwardly directed milk flow path traversing forwardly of said first opening,

35 said fourth opening introducing milk flow into said claw along a fourth
forwardly directed milk flow path traversing forwardly of said second opening,

said first and third milk flow paths being nonintersecting such that milk
flowing from said first opening along said first milk flow path does not intersect milk
flowing from said third opening along said third milk flow path,

40 said second and fourth milk flow paths being nonintersecting such that
milk flowing from said second opening along said second milk flow path does not
intersect milk flowing from said fourth opening along said fourth milk flow path.

2. The milking claw according to claim 1 wherein:

said first opening is rearward of said third opening;

said second opening is rearward of said fourth opening.

3. The milking claw according to claim 1 wherein said first and
third openings have leading portions laterally adjacent each other, and said second
and fourth openings have leading portions laterally adjacent each other.

4. The milking claw according to claim 1 wherein said first and
third openings have trailing portions longitudinally spaced from each other, and said
second and fourth openings have trailing portions longitudinally spaced from each
other.

5. The milking claw according to claim 1 wherein said first and

third openings are spaced laterally from said second and fourth openings such that flow along said first lateral side along the top does not intersect flow along said second lateral side along the top.

6. The milking claw according to claim 1 wherein:

said claw top has first, second, third and fourth interior contoured surfaces respectively directing milk therealong from said first, second, third and fourth inlets;

5 said first and third inlets and said first and third contoured surfaces are on a first lateral side of said longitudinal axis;

 said second and fourth inlets and said second and fourth contoured surfaces are on a second lateral side of said longitudinal axis opposite said first lateral side;

10 milk entering said claw through said first inlet flows rearwardly along said first contoured surface on said first lateral side of said longitudinal axis;

 milk entering said claw through said second inlet flows rearwardly along said second contoured surface on said second lateral side of said longitudinal axis;

15 milk entering said claw through said third inlet flows forwardly along said third contoured surface on said first lateral side of said longitudinal axis;

 milk entering said claw through said fourth inlet flows forwardly along said fourth contoured surface on said second lateral side of said longitudinal axis;

20 said first and third contoured surfaces are longitudinally spaced from each other such that milk flowing rearwardly along said first contoured surface does not impinge milk flowing forwardly along said third contoured surface;

 said second and fourth contoured surfaces are longitudinally spaced from each other such that milk flowing rearwardly along said second contoured surface does not impinge milk flowing forwardly along said fourth contoured surface.

7. The milking claw according to claim 6 wherein said claw bottom has longitudinally spaced front and rear ends;

5 said first contoured surface directs milk flow rearwardly and downwardly to said rear end of said claw bottom on said first lateral side of said longitudinal axis;

said second contoured surface directs milk flow rearwardly and downwardly to said rear end of said claw bottom on said second lateral side of said longitudinal axis;

10 said third contoured surface directs milk flow forwardly and downwardly to said front end of said claw bottom on said first lateral side of said longitudinal axis;

said fourth contoured surface directs milk flow forwardly and downwardly to said front end of said claw bottom on said second lateral side of said longitudinal axis.

8. The milking claw according to claim 7 wherein said first, second, third and fourth contoured surfaces terminate substantially tangentially to respective mating surfaces of said claw bottom such that milk is delivered to said claw bottom with minimal splashing.

9. The milking claw according to claim 6 wherein said first, second, third and fourth contoured surfaces are initially substantially tangential to said first, second, third and fourth milk flow paths, respectively, from said first, second, third and fourth inlets, respectively.

10. The milking claw according to claim 6 wherein:
said claw top has longitudinally spaced front and rear ends;
said first contoured surface has a leading end at said first inlet and has a trailing end at said rear end of said claw top;

5 said second contoured surface has a leading end at said second inlet and
has a trailing end at said rear end of said claw top;
 said third contoured surface has a leading end at said third inlet and has
a trailing end at said front end of said claw top;
 said fourth contoured surface has a leading end at said fourth inlet and
10 has a trailing end at said front end of said claw top;
 said leading end of said first contoured surface is rearward of said
leading end of said third contoured surface;
 said leading end of said second contoured surface is rearward of said
leading end of said fourth contoured surface.

11. The milking claw according to claim 6 wherein said first
contoured surface is spaced laterally from said second contoured surface to separate
the flow from said first inlet from the flow from said second inlet, and said third
contoured surface is spaced laterally from said fourth contoured surface to separate
5 the flow from said third inlet from the flow from said fourth inlet.

12. The milking claw according to claim 6 comprising:
 a rearward separational surface laterally between said first and second
contoured surfaces and providing a rearward separational director therebetween,
 said rearward separational director directing milk flow from said
5 first inlet along said first contoured surface and away from said second contoured
surface,
 said rearward separational director directing milk flow from said
second inlet along said second contoured surface and away from said first contoured
surface;
10 a forward separational surface laterally between said third and fourth
contoured surfaces and providing a forward separational director therebetween,
 said forward separational director directing milk flow from said

third inlet along said third contoured surface and away from said fourth contoured surface,

15 said forward separational director directing milk flow from said fourth inlet along said fourth contoured surface and away from said third contoured surface.

13. A milking claw for a dairy animal having a backbone defining an axially extending longitudinal direction, and an udder having four teats comprising a front pair of laterally spaced teats and a rear pair of laterally spaced teats, said claw having a top having four inlets directing incoming milk flow into
5 said claw respectively from said four teats, said claw having a bottom having an outlet subject to vacuum for drawing milk therefrom, said claw lying along a central longitudinal axis extending between the animal's legs and generally parallel to said backbone, said inlets comprising a front pair of first and second inlets laterally spaced on opposite sides of said longitudinal axis and receiving milk from said
10 front pair of teats and directing such milk rearwardly into said claw on laterally opposite sides of said longitudinal axis, and a rear pair of third and fourth inlets laterally spaced on opposite sides of said longitudinal axis and receiving milk from said rear pair of teats and directing such milk forwardly into said claw on laterally opposite sides of said longitudinal axis, wherein:

15 said first, second, third and fourth inlets comprise first, second, third and fourth tubular members, respectively, each tubular member having an entry end and a discharge end and a tubular extension therebetween;

 said tubular extensions of said first and third tubular members longitudinally cross each other on a first lateral side of said longitudinal axis;

20 said tubular extensions of said second and fourth tubular members longitudinally cross each other on a second lateral side of said longitudinal axis, said second lateral side being opposite to said first lateral side.

14. The milking claw according to claim 13 wherein:

said entry end of said first tubular member is forward of said entry end of said third tubular member;

5 said discharge end of said first tubular member is rearward of said discharge end of said third tubular member;

said entry end of said second tubular member is forward of said entry end of said fourth tubular member;

said discharge end of said second tubular member is rearward of said discharge end of said fourth tubular member.

15. The milking claw according to claim 13 wherein:

said claw top has longitudinally spaced front and rear ends;

5 milk from said first teat flows rearwardly through said first tubular member and is discharged rearwardly into said claw to flow rearwardly toward said rear end of said claw top;

milk from said second teat flows rearwardly through said second tubular member and is discharged rearwardly into said claw to flow rearwardly toward said rear end of said claw top;

10 milk from said third teat flows forwardly through said third tubular member and is discharged forwardly into said claw to flow forwardly toward said front end of said claw top;

milk from said fourth teat flows forwardly through said fourth tubular member and is discharged forwardly into said claw to flow forwardly toward said front end of said claw top;

15 said discharge ends of said first and third tubular members are on a first lateral side of said longitudinal axis;

said discharge ends of said second and fourth tubular members are on a second lateral side of said longitudinal axis, said second lateral side being opposite to said first lateral side;

20 milk flow from said first tubular member does not intersect milk flow
from said third tubular member along said claw top because milk flows rearwardly
from said discharge end of said first tubular member from a point rearward of said
discharge end of said third tubular member;

 milk flow from said second tubular member does not intersect milk
25 flow from said fourth tubular member along said claw top because milk flows
rearwardly from the discharge end of said second tubular member from a point
rearward of said discharge end of said fourth tubular member;

 milk flow from said third tubular member does not intersect milk flow
from said first tubular member along said claw top because milk flows forwardly
30 from said discharge end of said third tubular member from a point forward of said
discharge end of said first tubular member;

 milk flow from said fourth tubular member does not intersect milk flow
from said second tubular member along said claw top because milk flows forwardly
from said discharge end of said fourth tubular member from a point forward of said
35 discharge end of said second tubular member.

16. The milking claw according to claim 13 wherein:

 said first and third tubular members cross each other at a first crossing
zone;

 said second and fourth tubular members cross each other at a second
5 crossing zone;

 and comprising:

 a first structural connection member between said first and third tubular
members at said first crossing zone;

 a second structural connection member between said second and fourth
10 tubular members at said second crossing zone.